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unconsciously by persons within sensory range of the horses, and that the precautions which Krall and others have employed to exclude such guidance, have been insufficient. He lays especial stress on the wholly inadequate use of experiments "without knowledge."

Perhaps the portion of Ettlinger's discussion which will seem most interesting to the average reader is that in which he shows how easy it is for one with very moderate mathematical skill, aided by a very little special knowledge, to solve mentally examples in the extraction of roots which at first sight seem of so great difficulty that they have been employed at Elberfeld as experiments "without knowledge" on the ground that the answers were unknown to the spectators and could not be reached by any one present as promptly as they were gotten by the horses. Such an example as $\sqrt[4]{4084101}$ seems to the uninitiated a fairly embarrassing one for head reckoning, but when it is known that the last digit of any exact 5th power is always the same as the last digit of the root (and therefore in this case 1) and that the tens in the root are to be found from the figures remaining at the left, when the five at the right have been pointed off, here 40, it is easy to see that the root required can only be 21. The case is a little more complicated for cube roots, though here again the final digit of the power always bears an easily determinable relation to the final digit of the root. The errors made by the horses with examples in cube and fifth roots are also such as to support the hypothesis that the roots in both cases were obtained by estimate under guidance of knowledge of these special relations and not by actual calculation. Square roots and fourth roots offer much greater difficulty and appear not to have been so much used as the odd roots and when used to have been tried in a good many cases with relatively easy examples.

Of considerable interest also is the citation from the Düsseldorf veterinarian, Dr. Karl Wigge, who reports that at least in one instance he saw an opening and closing of the eyes of the groom coincident with the beginning and ending of a set of taps given by Muhamed, and that when on another occasion he could place himself in such a position that he could see the groom from head to foot the horses did not succeed at all. Wigge and others have likewise noted, as was observed also in the case of Hans, that the horses seem to pay little or no attention to the blackboard from which they are supposed to be reading or on which their problems have been written, from which the inference is easy that they are not reading or calculating at all.

And so the matter stands, with much assertion upon one side and much denial on the other, waiting for the crucial experiment which, however, is not likely to be made unless Herr Krall is willing to offer more facilities than he has yet been ready to offer to those whom he knows to be hostile to his views.

E. C. S.

Die Realisierung. Ein Beitrag zur Grundlegung der Realwissenschaften. Band I. By OSWALD KÜLPE. S. Hirzel, Leipzig, 1912, pp. vii, + 257.

The problem of *Realisierung*, as set forth in this book, is the problem of apprehending in and through experience that which truly exists or has existed (p. 3). Professor Külpe states further that his purpose is to provide a justification for a realistic theory of objectivity, and he announces that his plan contemplates the publication of four volumes, of which the present one is the first. In

this introductory volume the author limits himself in the main to a discussion and refutation of views which conflict with his realistic position. These views constitute two main types, which he designates respectively as *Konscientialismus* and objective idealism. Of these the former maintains that all reality is such only in relation to consciousness, whether this consciousness be viewed as a particular fact or as consciousness *überhaupt*. It denies the possibility of dealing with reality independent of consciousness; or, in the language of the author, it refuses to admit that a process of *Realisierung* actually occurs in human knowledge. It maintains that the real is identical with content of consciousness. On the other hand, objective idealism grants that the real is not content of consciousness, but something to be achieved through intellectual endeavor. Its emphasis, however, is placed, not on the real as existent, but on the process; the real is not presupposed, but construed; investigation is a process of world-creation into merely asymptotic approximation to an endlessly remote goal.

Nearly the whole of the volume is devoted to a discussion of the first of these alternatives, for the reason that, in the opinion of the author, the results of this discussion make it possible to dispose of the idealistic contention with great brevity. The consideration of *Konscientialismus* is introduced with a careful and elaborate statement of its fundamental doctrines, which are then reviewed and refuted in detail. The central thesis of the argument is that the facts of consciousness are not reality but the datum which constitutes our point of departure in the attainment of the real. In other words, the real is not a matter of direct apprehension, but is attainable only as an object of thought (p. 240). The error of *Konscientialismus*, so it seems, consists, on the one hand, in the neglect of unperceived psychical contents and the difference between sense-objects and the objects of science, and, on the other hand, in its failure to appreciate the radical difference between sense-impression and thought. As Professor Külpe phrases it, the qualities presented in sense-impression are necessarily contents of sense-impression, but objects presented to thought are not in the same manner contents of thought. Impressions of color are necessarily impressions, but we can not say similarly that the thinking of an object reduces the object to a thought.

While avoiding personal polemics, the author treats the insufficiencies of *Konscientialismus* with much dialectical skill and with considerable freshness of presentation. The inadequacy of the appeal to immediate awareness, the ambiguity of solipsism, the logical admissibility of an extra mental object, the impossibility of reducing the objects of science to data of consciousness, the fundamental difference between sense and thought, are all set forth with commendable clearness and impartiality. Having thus defended his view against this enemy, he turns to a brief exposition of the likeness and differences between his standpoint and that of objective idealism. The two are in agreement in recognizing a real which transcends the data of consciousness and in constituting it an object of thought. The author is apparently not wholly averse to the notion of a pure, creative thought (pp. 250-251), but protests against the exaggerations of idealism. Unless we view our experiences as clues or indices to pre-existent fact in the realistic sense, we are tempted in the direction of an *a priori Naturphilosophie*, and are left without a standard or criterion by which to control the results of our thinking.

These remarks will perhaps serve to indicate Professor Külpe's mode of approach and the problems that rise up in his path for consideration in the later volumes. Sense-impression and thought are widely sundered, and the task of *Realisierung* is a task for thought alone. The author does not permit himself to suppose that this first volume has accomplished more than a refutation of the objections which might be urged from other points of view. The problems and difficulties inherent in the position will no doubt stand out more clearly when the attempt is made to demonstrate the internal coherence of the standpoint. It may be permissible, however, to suggest a difficulty that appears to be peculiarly formidable. If sense and thought are so widely divergent as we are led to believe, the suggestion lies close to hand that thought must necessarily have categories of its own, in which case it would seem to be in a position to claim *a priori* validity for the world of reality to which it refers. The author's doctrine of thought is faithful to the realistic presuppositions of this standpoint in that it postulates a world upon which thought operates more or less *ab extra*, in the sense that this external world does not participate in the processes by which the knowledge of it is achieved. Hence the assertion that there are unperceived psychic processes,—whatever that may mean; hence also the hard and fast separation between concepts and their objects (cf. pp. 230, 234). Unless the author is able to bridge over this gulf between sense and thought in some novel way hitherto unsuspected by philosophers, his defense of "realism" necessarily remains inconclusive. The reduction of the individual to a bundle of universals (pp. 137, 215) and the concessions made to idealism with regard to the nature of thought, give ground for the suspicion that Professor Külpe's realism is an insecure super-structure reared on a foundation of objective idealism.

The book should be of special interest to American readers in that it furnishes an able discussion of a topic which is prominent in our current philosophy. It is supposed to clear the ground by showing that the objections to a realistic view of objectivity or *Realisierung* are inadmissible. The American reader, however, can not fail to be struck by the omission of all reference to pragmatism from the discussion. That a movement of such significance, vigor and scope, with its novel and cardinal doctrine of *Realisierung*, should fail even of polite mention by a writer like Professor Külpe is another illustration of the fact that to our German friends a *Würdigung* of the philosophic activities of America is a waste of time. According to pragmatism the philosophy of Professor Külpe shares with the *Konscientialismus* and objective idealism which he attacks a conception of the relation between thought and object which makes it possible for refutation and counter-refutation to go on without end, and which makes the hope for a coherent doctrine of *Realisierung* on that basis a delusion. What is needed is, so it contends, a thorough-going reconsideration along lines which it indicates, of the nature and function of thought and of the criterion of objectivity. Whether the pragmatic doctrine of *Realisierung* be right or wrong, the omission of this alternative leaves ground for the claim that Professor Külpe's conclusion in favor of realism begs the question at issue, and it seriously impairs the value of an able and readable book.

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